User Manual

Mini125RD FOLDING BICYCLE

Thank you for your patronage! The Mini125RD is a new concept folding bicycle. It is intended to be as light as possible. ***This Folding bike is one of the lightest folding bicycle in the world. Totally handmade. It represents the state of the art of folding bikes. With Super high rebound urethane wheels it becomes very fast with the potential to break speed records due to the low rolling friction. Available also with 150mm pneumatic tires to negotiate rough pavement such as cobblestone. It folds in seconds and it can stand vertically when folded. Gearing can be changed either by the wheel diameter or by the rear pinion. Available rear pinions are: 6T, 7T, 8T, 9T and 10T. The final gear ratio is typical of cities bikes. It rides very well on smooth pavements, but it can handle also rough tarmac. The version equipped with polyurethane wheels is front suspended, making it the lightest front suspended Folding Bike by more then 4.5kg. This bicycle can accept wheels from a diameter of 100mm to 150mm. Mounted with 100mm wheels it becomes the bicycle with the smallest wheels on earth. Now available in several models and wheels combinations: Mini125RD, Mini125RD_ob, Mini125RD_100 and Mini125RD_p. Mini125RD_ob stays for Mini125TRD_onebrake. This model has only the rear brake. The Mini125RD_onebrake weights 5.7kg. The Mini125RD has two brakes. These two models come with polyurethane wheels of a diameter ranging from 125mm down to 110mm. The Mini125RD_100 has 100mm wheels. The Mini125RD_p has pneumatic tires with a diameter of 150mm. Since the frame is the same it is possible to switch from one model to an other by changing only few parts.***

Portable Folding Bicycle;
Weight = 5.9kg (12.9 lb)
Chain Gear= 84T X 8T or 84T X 7T (free wheel) Minimoto style chain
Wheels= 5" (125mm)(and 110mm, 4.3") with super high rebound polyurethane tyres 82A
FOLDING TIME=5 sec
Gear Development= from 3.62m to 4.71m depending on wheel diameter (110mm to 125mm) and rear sprocket (7T or 8T); GEAR INCHES= from 45" to 59" depending on wheel diameter (110mm to 125mm) and rear sprocket (7T or 8T); Crank Length= 165mm; Rider max weight: 80kg (176 lb) , Rider size: from 140cm to 183cm (4'7"-6'0")
Folded size: 73 x 31 x 22cm (28,7"x12,2"x8,7")
Unfolded size: 100 x 75 x 32cm (39,4"x29,5"x12,6")
COLORS=Anodized Silver,
DISTANCE: SADDLE TO PEDAL Min: 700 mm (27.5") Max: 945 mm (37")
FRAME = Tig Welded Sheet metal - tubes Aluminum construction.
FORK= Integrated clamp mechanism, suspended 1" travel.
Rear SUSPENSION = elastomer non bobbing soft tail

Folding and Unfolding the Bicycle

The saddle post and the handlebar can pivot on their hinges and be placed on their respective folded resting positions located at the plastic clamps shown in the following pictures.

To fold, release the saddle post latch, and carefully drop the saddle into its plastic clamp. Then release the handlebar hinge by loosing the handlebar hinge knob and bring it to its plastic clamp seat.
The bicycle is right now folded and it can stand vertically, the rear wheel down.
To unfold repeat the two previous operations backward.

Folding Sequence:

0

1
2 3Note: to achieve vertical standing of the bicycle some tuning and adjustment of the right bar end might be needed by the end user.

Following steps are optional: Brompton Cover;

4 5

Trolleying it around:

Pull Trolley

Push Trolley

Front hinge knobs: 3 types available.

Type1

Type2

Type3

Front Hinge

Rear Hinge

Adjusting the Seatpost

By shortening (by cutting) or lengthening (by adding a washer) the seat post elastomer the distance between the saddle and the handlebar can be adjusted. Make sure to keep the seat post kind of vertical. Inclination of the saddle post should not exceed -+2 degrees form a vertical line.

Rear Hinge folded

Rear Hinge unfolded

Adding a shim to adjust saddle position

Using an old tube cut-out as a shim to dampen shocks
It works quite effectively. Make sure to have about 2 or 3mm of soft tube rubber cushion. More will be too much, less will be barely felt.

Front Fork

Front fork parts:
(confidential)

Especially during the first kilometers of use , it might be required to tighten up the steering head set. This can be done , on the fly, (as in the following picture) by releasing the clamp that there is on top of the spring. Then by pushing down the bike from the handlebar (with your chest or belly) and in the same time tightening back the clamp that there is on top of the spring. This technique squeezes back the head set. Normally after several kilometers the head set will stabilize and there will no need to squeeze it back. The system has been designed in a way that squeezes itself under its own weight.

Compress the front fork by pushing the fork down with your chest and snag the clamp in the same time:

The front brake axle includes two plastic shims. These shims purpose is to help reducing the bicycle noise. These shims need to be cut and adjusted bike by bike, making sure that the front brake touches the front wheel in a symmetrical way.

Front Hinge and Handlebar

Front hinge parts:

(Confidential)

Front fork and handlebar are coupled and numbered.
Make sure to grease up the internals of the hinge.

By tightening the knob (on the left of the picture) the handlebar gets squeezed on the front fork. Make sure , when you tight it, to push it as much as possible toward the head set.
If the bolt slips while you tighten the knob, normally it will slip when it is already tight enough, but you want to always to make sure that you have lubricated the knob screw and kept not lubricated the bolt. By doing this the bolt should not slip at all. An other way to contrast slipping is to hold with your finger the bolt washer, that normally enables snagging.

(Snagging picture)

Important noise reduction device:
Inside the handlebar tube, the brake housings are inserted into a small old bicycle tire tube. The purpose of this is to reduce the noise made by the brake housing slamming inside the handlebar pipe.

Rear Hinge

Rear hinge parts:

(Confidential)

Make sure every now and then that the rear hinge screws are tight. If the hinge is too loose then tight the screws up. If by tightening up you have bottomed out and the two side washers are touching the hub pin (brown hard anodized 20 mm aluminum tube), then add a thin washer on the bike left side to enable yourself tightening up again. When you tighten up the rear hinge, always make sure not to over do it. Always keep and eye on the internal Teflon washers, not to squeeze them too much.
If the rear hinge is taken apart, then use a 20mm extractor to remove the hinge pin and grease it up before re installing it.

Rear Hub and Eccentric

(Confidential)

Use Epoxy glue to improve connection between rear wheel and hub

To help out the transmission of the torque from the rear hub to the wheel, one technique is to add a few drops of epoxy glue between the hub and the wheel. With metal core wheels it is possible to use instead epoxy glue, to use thread lock liquid. Do not be afraid, even with the epoxy glue it will be then possible to take apart the wheel from its hub. Sometimes it might be required to use a vive to pry apart the wheel from the hub. Many times the rear wheel will hold on its hub just by snagging it in, but if it slips it is better to glue it instead of tightening further the rear hub.

Aligning and Tensioning the Chain. Installing the rear Wheel

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Note (removing a link from the chain): after having re tensioned the chain many times, it might happen to run out of eccentric re tensioning capacity (meaning, it is turned all the way against the bottom bracket) in that case it might be required to shorten the chain of one link. That operation needs to be done with a chain breaker. It can be done easily by any pocket bike mechanic, since this bike uses the same chain as a pocket bike.

Brake Levers

Brake levers are set as used in Japan. Front brake on the right, rear brake on the left.

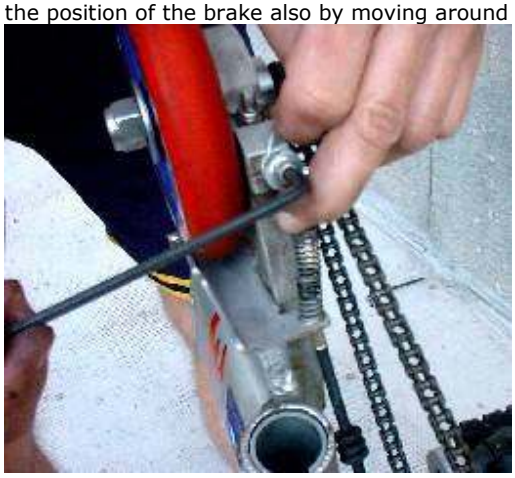
Adjust the Brakes

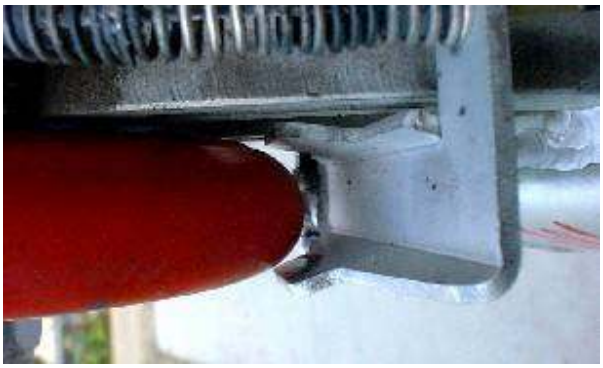
For either front or rear brake: loose the cable brake screw. Pull the cable brake till reaching the desired distance between the brake and the wheel. Adjust the spring length if necessary, by removing spring segments.
Carefully check the alignment of the brake and the wheel. It is possible to adjust the alignment position of the brakes by carefully positioning either the brake spring or the brake cable housing.
Snag again the brake cable screw and, if required, adjust the brake clearance with the adjustment screw located at the brake lever.

Video brake regulation (on Construction)

Front and Rear brakes:

Snag the brake cable screw while tensioning the brake cable by hand;
Double check the brake and wheel alignment. The brake is intended to freely move to the right position. You can modify the position of the brake also by moving around the brake spring:





Adjust according to necessity the length of the brake spring by removing spring segments:

Mini125RD Front brake cable bolting layout.

It is important to bolt the front brake cable to the fork side plate in a front-to-back pattern (see following pictures). Additionally, it is important to make sure that, inside the brake spring; there is a plastic tablet bushing. This bushing of transparent plastic in the picture needs to be as long as possible, while allowing the brake to travel all the required distance. Normally this length is about 35mm for 110mm wheels and 45mm for 125mm wheeled bikes. The user need to make sure that this bushing does slide thru gravity to the lowest point possible inside the spring.
The purpose of this bushing is to eliminate direct contact between the brake spring and the brake cable.
If the brake spring touches the brake cable in the lower area, right at the contact with the fork plate, then the brake cable will fail rapidly. The brake cable should be bolted between the fork aluminium plate and a set of 3 or 4 washers. That will provide a seat for the spring. The failure is most of the times located on the brake cable right at the connection between the washers and the cable. This failure is due to the fact that the cable get loaded axially, thru the brake lever pull, but also radially , due to reaction forces created by the (possible) spring mis-alignment. When the radial force is generated by direct contact between the spring and the cable, then this load became particularly damaging, and it should be avoided.
Bolting the front brake cable with a back-to-front pattern, will increase the spring getting off set likelihood and also increase the bicycle noise due to spring and fork vibration contact.
Sa same failure mode might happen in the rear brake, though is less likely due to the lower forces that get applied to the rear brake cable.
We ask the bicycle user to increase the frequency of inspections to the brake cables (front and rear) at the connection area with the frame. We ask the bicycle user to make sure that the plastic tubule inside the spring does protect the spring from touching the brake cable, by being located in the lowest section of the spring.

Please, for any additional help or to report failures, contact me at (gganio.geo@yahoo.com)

Figure 1 Correct cable bolting pattern (side picture) Front-to-back bolting.

Figure 2 Correct cable bolting pattern (front picture)

Figure 3 Spring and plastic bushing

Figure 4 Wrong setup, back-to-front bolting.

Changing the rear wheel
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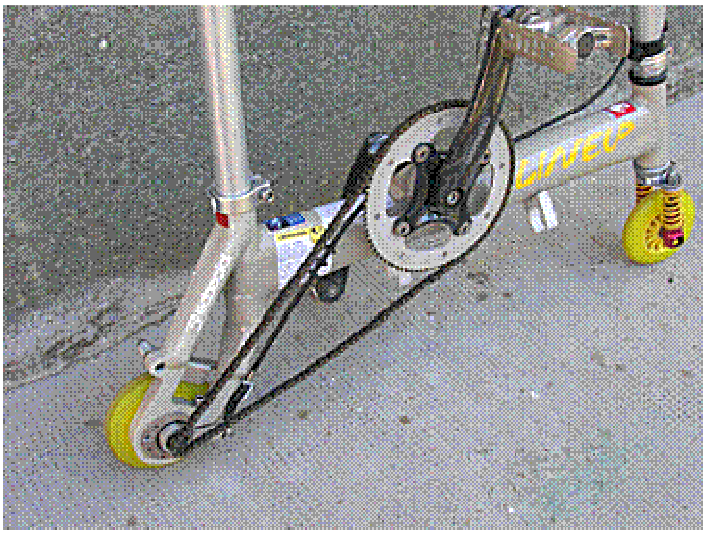
Two Free Wheel Setup Options: Front Freewheel or Rear Hub Freewheel

Front Freewheel setup


Rear Hub Freewheel.

Changing the Rear Pinion (rear hub freewheel case)
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Hold the freewheel hub with a thin 13mm wrench, as the one normally used for bicycle wheel hub cones.
Unscrew the pinion helped by a pair of pliers or by a purpose made tool.
Take off the old pinion. Screw in the new pinion, without snagging it. By pedalling it will get snagged in anyway.

Video of operation (On Construction)

Pinion Removal Sequence:

The Pinion thread is M8x1.25mm
Pinions:

6T
7T
8T
9T
10T

Chain link breaker:

Make sure to use plenty of grease while re-assembling the pinion. The grease will protect the hub mechanism from moisture and help out for the next time around in which the pinion will need to be removed. There is no need to snag in place the pinion since it will get automatically snagged by the chain itself.

Lubricating the free wheel

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Wheel Options

The Mini125RD has been designed to work with 125mm, 110mm, 100mm polyurethane (PU) wheels and with 150mm pneumatic wheels. The nominal PU wheel width is 24mm, but with some adaptation the also width from 28mm to 22mm can be accepted

Some of the available wheels and colours. The wheels are the same of the one used by inline skates, kick scooters and roller skis. Therefore all of those wheels can be used on a Mini125RD.

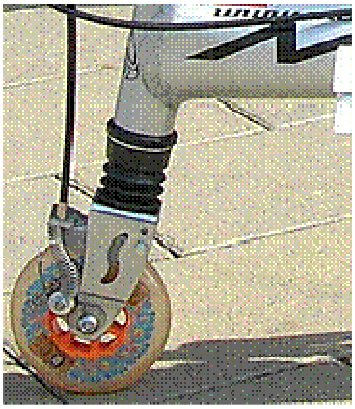
Installing 110mm wheels

To install the 110mm wheels, you might want to modify the gearing of the bicycle to adapt it to the smaller wheels, for example by using a 7 teeth rear sprocket.
The 110mm wheels are then installed in the same way as the 125mm wheels, but it is required to adjust the brake spring length, by removing spring segments.

125mm and 110mm wheel Bikes:

Installing 100mm wheels

To install the 100mm wheels, a different rear brake is need. This rear brake is available as spare part.
Additionally the front brake if available needs to be moved to the lower hole.



100mm wheel bike and rear brake.

Installing 150mm Pneumatic wheels (and 145mm PU)

To install the 150mm pneumatic wheels, a different lower front fork, brakes and rear hub are needed. All these parts are available as spare parts for people willing to modify their bicycle.

On the Mini125RD_p bike sometimes it might be required to add a washer under the side handlebar plastic clamp to keep the handlebar away from touching the rear hub. Without that washer the left handlebar grip might touch the tip of the rear hub bolt.

Mini125RD_p Pneumatic Wheel Note

Pneumatic tires are more comfortable then polyurethane tires; however they might have a higher rolling resistance. Therefore, while using the Mini125RD_p, always keep in mind these things:

1. Always keep the tires inflated to the maximum pressure. 90 psi, 6.2 bar. Tire pressure is one of the most important rolling resistance parameters. Do not use tires that can not inflate up to at least 85 PSI, 5.8 bar.
2. Consider that brand new tires will have a higher rolling friction then used ones. Therefore you will notice that little by little the rolling friction improves.
3. Warmer tire rolls better then colder tire. The bike will roll better during the summer. And it will feel slow with cold tires during the winter.
4. Since you have to keep the tire always at maximal pressure, you might want to consider spraying once into the tire a lattice rubber product, therefore improving the capacity of the tire to hold its pressure. BTW, that spray lattice might be useful to repair punctures while travelling.
5. Prefer slick tires over threaded ones, because they offer a better roll.
6. Equip yourself with a good bicycle pump or compressor with easy access to the wheel valve.
7. Tension and adjust the brakes carefully, in a way that they do not touch the wheels while riding. As you might notice the weight of the brake cable housing moves around the brake callipers in such a way that they might touch the rims while riding.

If after all these attentions, you would like to further improve the rolling resistance or just have a solution that doesn't require constant care of the tire pressure, then you might want to use a 150mm polyurethane rear wheel (see picture).

Mini125RD PU Wheel Rim Material Note

Good polyurethane materials can be used till a temperature of about 80 degrees C.
During hot summer days the asphalt temperature can get very close to that limit. Since the fact that the rear wheel warm up itself during riding, because of energy dissipation, that under hot condition can lead to rear wheel melting. Rear wheel melting will be more likely to happen for heavy riders using bikes that have been set with a long gear. Wheel melting will happen only with PU wheels with plastic rim. By using metal core wheels the PU will not melt also at high weather temperatures, and with very long gears, because aluminum conduct about 100 times more then plastic the heat and therefore the PU will be kept under thermal threshold by dissipating the heat into the aluminum.
Pneumatic wheels are made with rubber, therefore they have no melting problem.
Front wheels operates at lower loads, therefore they can always use plastic rims.

Spring, Summer, Fall and Winter PU Wheels:

This table suggests which **rear** wheel to use function of your weight, riding style and ambient temperature. An other important factor is the quality of the pavement where you ride. Softer compounds will be faster on coarser pavements. Above 35 degrees C metal core wheels are mandatory for aggressive riders.

PU compound hardness in shore A.
Ambient Temperature in degrees C.

	Ambient T< 15°C	15°C<Ambient T< 35°C	35°C<Ambient T
Normal Light Rider <60 kg	78A, Plastic rim	82A, Plastic rim	82A, Plastic rim
Normal Heavy Rider <80kg	78A, Plastic rim	82A, Plastic rim	85A, Aluminium rim
Aggressive Rider, Long Gears	82A, Plastic rim	85A, Aluminium rim	85A, Aluminium rim

Maintenance timing

Replace = R, Inspect = I, Lubricate = L, Adjust = A

	During Break-in	Before each trip	Every 100 km	Every 200 km	Every 500 km
Head set	A			I	
Rear Hinge	A		A		
Front Hinge and Knob	A	I		L	
Front Fork (shaft, keylock, nylon guide, o-rings, spring bellow)				L, I, A	
Plastic clamps	I	I			
Chain Tension	I, A	I	A		
Chain (with 8 teeth sprocket)		L		I	R
Rear sprocket (8 teeth)		L		I	R
Chain (with 7 teeth sprocket)		L		I	R
Rear sprocket (7 teeth)		L	I	R	
Chain (with 6 teeth sprocket)		L	I	R	
Rear sprocket (6 teeth)		L	R		
Rear Wheel (if used with brake)		I		R	
Front Wheel (if used with brake)			I		R
Front Wheel (if used w/o brake)					I
Rear Brake		I			R
Front Brake		I			R
Rear Brake Cable and spring bushing			I		R
Front Brake Cable and spring bushing			I	R	
Free Wheel Hub				L	I
Eccentric Roller Bearings			I	L	L
Chainring				I	I
Rear Wheel / Hub connection (Glue)			I		

Not Gorilla Proof

This bicycle is intended for city street commuting and bicycle touring. It has been designed to be as light as possible while being submitted to the typical loads generated by bicycle commuting. Using this bicycle for free riding evolutions, unreasonable accelerations, hitting obstacles at unreasonable speeds or any other similar activity will result in the sudden failure of the bicycle in one of its parts.
Treat this bicycle with care.
Strong legged riders might experience pinion chain noise under heavy accelerations.
Ways to reduce the occurrence of this noise is to tension the chain properly and to use a newer pinion.
Using a high quality crank might also help in reducing the occurrence of this noise.
The Pinion Chain Noise can occur for many hours before leading to chain/pinion failure.
Stronger riders might get the free wheel to skid. This condition can be sustained for some minutes before leading to free wheel failure.
Going downhill with this bicycle for more then 2km might lead to wheel melting. This is function of the road grade of descent, rider weight, ambient temperature and several other factors. Therefore this bicycle is not intended to be used on long downhill trips.
So far this bicycle has been tested for a rider maximum weight of 80kg.
Riding on wet surface is normally too skidding with new wheels. With used wheels it is normally OK. Furthermore, when riding on wet surface, because of the low distance of the roller bearings from the surface, moisture will enter the roller bearings. It is therefore required to lubricate the roller bearings after each wet ride.

Totally Handmade by me and friends

This bicycle is totally handcrafted as a complete custom prototype. It has been built practically totally by me with the help of few friends. Because it is totally handmade, a certain level of adjustment and tuning will have to be performed by the final user, since hand made products are not and can not be identical from each others.

Get Assistance

On construction
For assistance e-mail: gganio.geo@yahoo.com

Responsibility Disclaimer

Bike Riding is dangerous and can be deadly. This bike is a prototype. Safety testing is still on progress. The user is expected to evaluate on his own the safety of this bike. The maker claims no responsibility for any injury or accident caused by the use of this bike.

Commercial Note

Products and prices can change without notice. Front suspension fork might have a little slant because we build it without a fixed jig, sorry. The Maker will provide Lifetime assistance and parts in case of need. The Maker will pre-test and break-in some the prototypes for safety concerns.
Because of the prototype status of these products, any of them can be delivered in new or less then new conditions, since they will be pre used for break-in and for demonstration rides at bicycle shows.

Available Spare Parts

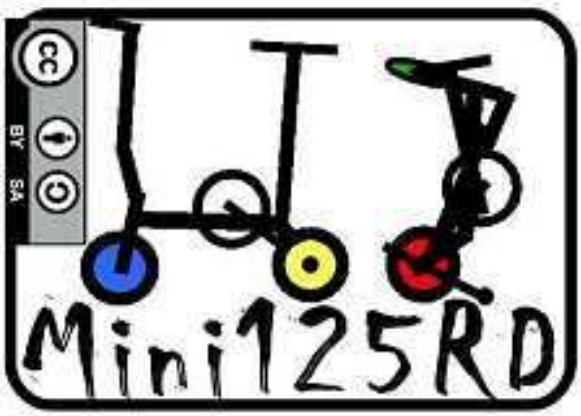
On construction
To check availability e-mail: gganio.geo@yahoo.com

Extraordinary Maintenance
ALL CONFIDENTIAL
(On Construction)

Change Pinion Hub
Replace Main Hub
Replace Eccentric bearings
Replace eccentric

Summary of Our Selling Policies

Payment	Money Orders, Bank Checks, Wire Transfers. We will take Business or Personal Checks. However items will not be shipped until check has cleared.
Sales Tax	Unless specified differently, sales within the EU are already inclusive of the sales tax. Unless specified differently, buyers outside of the EU are responsible for handling all import fees and international sales taxes.
Shipping	We will ship anywhere in the world. The buyer must pay the shipping costs. All shipping cost quotes are an estimate and could change based on actual weight and if liftgate or a forklift is needed for unloading. If the item needs to be crated this is a extra cost. The cost is based on the size of the item. If you want shipping insurance you must advise us.
Delivery	The item will be ship 1 to 7 days after clearance of payment. If item needs to be crated it may take extra time. Items may be pickup by advance appointment. Some items we sell require special trucks and trailers for shipping to be cost effective. It could take anywhere from 7 to 14 days for you to received the item.
Refunds & Returns	Unless specified differently, we do accept returns. Our return policy changes item by item, but it normally includes a 20% restocking fee. All items are sold as is where is no warranty, unless stated. The products we sell are in new or less then new conditions, since they are pre used for break-in and for demonstration rides at bicycle shows. The paint may be blemished in few spots; there may be some minor dents. Some minor adjustments may be needed.
Contact Us	We can be contacted by phone in Italy at ++39 0114155618 or mobile phone ++39 349 5472346. Email (gganio.geo@yahoo.com) or regular mail. We try our best to answer Emails within 24 Hrs. If you have a question please do not hesitate to call us at anytime. We want you to be a happy satisfied buyer so please does not hesitate to call with any type of question.



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Chassis Data

MODELLO: Mini125RD
SERIAL NUMBER: _____
COLOR: _____
PRODUCTION YEAR: _____

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